

# Three new species of *Leptospermum* (Myrtaceae) from Queensland and northern New South Wales

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## Abstract

Bean, A.R. (Queensland Herbarium, Brisbane Botanic Gardens Mt Coot-tha, Mt Coot-tha Road, Toowong, Queensland 4066, Australia) 2004. Three new species of *Leptospermum* (Myrtaceae) from Queensland and northern New South Wales. *Telopea* 10(4): 831–838. The new species ***Leptospermum anfractum***, ***Leptospermum benwellii*** and ***Leptospermum barneyense*** are described and illustrated. Herbarium and field keys to the identification of taxa belonging to *L. brachyandrum* subgroup are presented.

## Introduction

In her revision of *Leptospermum*, Thompson (1989) established informal taxonomic subgroups within the genus. In the *L. brachyandrum* subgroup, she included six species from south-western W.A. and six species from north-eastern Australia and New Guinea. Since this time, *L. madidum* and *L. pallidum* have been added (Bean 1992), and two of the species described here (*L. anfractum*, *L. benwellii*) belong to this subgroup. As the subgroup has considerably increased in number since Thompson's treatment, it seems appropriate to present new identification keys for it.

The third species described here (*L. barneyense*) belongs to the *L. polygalifolium* subgroup.

### ***Leptospermum anfractum* A.R.Bean sp. nov.**

affinis *L. brachyandro* autem cortice decidua ad planitiem soli, maronina ante exuentem; pedicellis glabris 1.3–2.8 mm longis, petalis sine glandulis olei differt.

Type: Queensland. North Kennedy District: Mount Stuart, 9 km S of Townsville, 14 December 1991, A.R. Bean 3867 (holo BRI; iso: MEL, QRS).

Spreading shrub to 2 m high, trunks and stems twisted and contorted; bark smooth and deciduous throughout, purple to maroon coloured, shedding to white. Branchlets sparsely pubescent, glabrescent, stem flanges present, conspicuous. Leaves alternate, subsessile, discolorous, linear, 17–30 × 1.8–4.4 mm, apex acute to acuminate; appressed indumentum persistent on lower surface; upper surface glabrous. Inflorescence axillary, comprising 1–6-bracteolate monads, floral bracts shed before anthesis. Flowers 5–7.5 mm diameter; pedicels 1.3–2.8 mm long at anthesis; hypanthium glabrous, 1.9–2.4 mm long; sepals obtuse, c. 0.6 mm long, margin ciliate; petals white, obovate to orbicular, 1.8–2.6 mm long, oil glands absent. Stamens 0.7–1.0 mm long, anthers versatile, cells parallel; stigma capitate; roof of ovary glabrous. Ovary 3-locular. Fruit thin-walled, glabrous, campanulate to hemispherical, 1.8–2.2 mm long, 2.9–3.4 mm diameter, sepals persistent. Seeds pale brown, narrowly obovoid to cuneate, reticulate, 0.9–1.1 mm long. (Fig. 1).

**Distribution:** *L. anfractum* is endemic to Queensland. The main area of distribution is from Cardwell to Proserpine, including some continental islands, and there is a disjunct population near Laura on Cape York Peninsula.

**Habitat:** It inhabits rocky ridges and cliff-lines of sandstone, rhyolite or granite.

**Phenology:** Flowers are recorded from August to January; fruits from November to May.

**Affinities:** I had originally included *L. anfractum* within *L. brachyandrum* (Bean 1992), but additional material has persuaded me that it is distinct at species level. *Leptospermum anfractum* differs from *L. brachyandrum* by having bark deciduous to ground level (lower stems rough-barked for *L. brachyandrum*), recurved leaf margins (vs. flat), leaves with only the midvein visible (3–5 longitudinal veins visible for *L. brachyandrum*), new growth appearing glabrous to naked eye (conspicuously silky-hairy for *L. brachyandrum*), upper leaf surface glabrous (with appressed hairs, except on old leaves for *L. brachyandrum*), pedicels 1.3–2.8 mm long (0.6–1.1 mm long for *L. brachyandrum*), petals without oil glands (oil glands readily visible for *L. brachyandrum*), and fruits 1.8–2.2 mm long (2.5–2.7 mm long for *L. brachyandrum*). The habitat of *L. anfractum* (rocky ridges and cliff-lines) is also very different to that of *L. brachyandrum* (riparian communities with sandy soil).

**Conservation status:** *Leptospermum anfractum* is present on several coastal mountains and on some continental islands, including at least three populations within national parks. The places where this species grows are totally unsuitable for agriculture or grazing, hence it is not considered to be under any threat.

**Etymology:** from the Latin *anfractus* meaning bending, winding or crooked. This is in reference to the contorted stems and branches of the species in its natural habitat.

**Specimens examined:** Queensland. Cook District: Turtle Rock, SE of Laura, A.R. Bean 5512 & P.I. Forster, 22 Jan 1993 (BRI, K); at Turtle Rock lookout on Split Rock walking trail, 14 km S of Laura, V.J. Neldner 3887, 28 Jun 1992 (BRI, DNA, NSW). North Kennedy District: S end of Gloucester Island, G.N. Batianoff 940522 & H. Dillewaard, 11 May 1994 (BISH, BRI, CANB, MEL, NSW); Cockatoo Creek area, Mt Elliot, S of Townsville, A.R. Bean 3588, 11 Aug 1991 (BRI, CANB, K, MEL, NSW, PERTH); Mt Abbot, 50 km W of Bowen, A.R. Bean 4244, 29 Mar 1992 (BRI); Mt Abbot, 50 km W of Bowen, A.R. Bean 4872, 2 Aug 1992 (BRI, MEL); Mingela Bluff, R. Cumming 9294, 21 Sep 1989 (BRI); Cape Upstart peninsula, Hinson CU4, Jun 1967 (BRI); SF461, Five Mile Ck, c. 6.5 km S of Cardwell, Thorsborne 476 & Travers, 7 Oct 1978 (BRI); Stonehaven Bay, Hook Island, C. Warrion CW706, 14 Jul 1985 (BRI). South Kennedy District: Scawfell Island NP, 50 km ENE of Mackay, G.N. Batianoff 6103 & E. Hegerl, 17 Nov 1986 (AD, BRI, CANB, DNA, MEL, NSW).

***Leptospermum benwellii* A.R.Bean sp. nov.**

Affinis *L. inehmannii* autem costis elevatis caulis conspicuis, ramulis glabris praeter margines costium elevatarum, foliis trivenatis, petalis glandulis olei praeditis, pedicellis fructuum 1.3–1.9 mm longis differt.

Type: New South Wales. North Coast: just NE of Munningyundo Mountain, Nymboida N.P., between Grafton and Glen Innes, A.R. Bean 20113, 22 March 2003 (holo BRI; iso CANB, NSW).

Spreading shrub to 3 m high; bark smooth and deciduous throughout, orange or green coloured, peeling in ribbons. Branchlets with conspicuous stem flanges, pubescence sparse and mainly on margins of stem flanges. Leaves alternate, subsessile, discolorous, narrowly-elliptic, 18–25 × 2.7–5.0 mm, apex obtuse or mucronate; margins of young leaves with silky hairs, otherwise glabrous. Inflorescence axillary, comprising 1–3 bracteolate monads, floral bracts shed before anthesis. Flowers with pedicels c. 1.2 mm long at anthesis; hypanthium glabrous, c. 3 mm long; sepals obtuse,

1.2–1.4 mm long, inner and outer surfaces glabrous, margin ciliate; petals white, obovate to orbicular, 2.6–2.7 mm long, oil glands present. Stamens 1.5–2 mm long, anthers versatile, cells parallel; stigma capitate; roof of ovary glabrous. Ovary 3-locular. Fruit thin-walled, campanulate to hemispherical, 2.5–3 mm long, 4–4.7 mm diameter, glabrous; sepals sparsely hairy, persistent. Seeds pale brown, obovoid to ellipsoidal, reticulate, 0.8–0.9 mm long. (Fig. 2).



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Fig. 1. *Leptospermum anfractum* a, flowering branchlet  $\times 1$ ; b, leaf, abaxial surface  $\times 4$ ; c, flower  $\times 8$ ; d, infructescence  $\times 6$ . a, c from *Bean 3867* (BRI); b, d from *Bean 11562* (BRI).

**Distribution and habitat:** Known only from the type locality, where it grows on steep slopes of acid volcanic rock, in an open shrubland community. Associated species include *Acacia falciformis*, *Xanthorrhoea malacophylla*, *Ozothamnus diosmifolius*, *Plectranthus graveolens*, and stunted specimens of *Eucalyptus campanulata* and *E. notabilis*.

**Phenology:** Flowers are recorded for November; fruits from March to May.

**Affinities:** *Leptospermum benwellii* is closely related to *L. luehmannii* F.M.Bailey, but differs by the presence of conspicuous stem flanges (stem flanges absent for *L. luehmannii*), branchlets mostly glabrous except for margins of stem flanges (branchlets silky hairy *L. luehmannii*), leaves 1–3-veined (5–7 veined for *L. luehmannii*), leaves 2.7–5 mm wide (4.1–7.4 mm wide for *L. luehmannii*), petals with oil glands (oil glands absent for *L. luehmannii*), fruiting pedicels 1.3–1.9 mm long (0.5–1.3 mm long for *L. luehmannii*) and fruiting valves at rim level (exserted for *L. luehmannii*)

**Conservation status:** The only known population comprises about 50 mature-aged plants, if one includes those regenerating from a recent fire. Using the guidelines of the IUCN (IUCN, 2001), a category of Endangered is proposed (criterion EN D).

**Etymology:** Named for Andrew Samuel Benwell, a talented botanist and ecologist, who discovered this species during a survey of montane heathlands in northern New South Wales.

**Specimens examined:** New South Wales. North Coast: Mt Munningyundo, Nymboida N.P., west of Grafton, *A. Benwell 4*, May 2000 (BRI).

### Herbarium key to *Leptospermum* species from northern and eastern Australia, belonging to the *L. brachyandrum* subgroup

1. Flowers and fruits 4–20, sessile, in congested clusters..... 2  
Flowers and fruits 1–3 per inflorescence, not tightly clustered, with pedicels >0.5 mm long  
.....3
2. Leaves 7–11 mm wide, base obtuse; fruits 5–6.5 mm diameter ..... *L. speciosum*  
Leaves 3–5 mm wide, base cuneate; fruits 3–4 mm diameter ..... *L. whitei*
3. Stem flanges present on young branchlets ..... 4  
Stem flanges absent..... 7
4. Leaves 7–13 mm long, lower surface with dense appressed hairs .....*L. purpurascens*  
Leaves 20–50 mm long, those remote from apex of shoot glabrous or with scattered hairs on lower surface ..... 5
5. Leaf apex obtuse or mucronate ..... *L. benwellii*  
Leaf apex acute to acuminate ..... 6
6. Leaves with only midvein visible; new growth appearing glabrous to naked eye; pedicels  
t.3–2.8 mm long; petals without oil glands ..... *L. anfractum*  
Leaves with 3–5 longitudinal veins; new growth conspicuously silky-hairy; pedicels  
0.6–1.1 mm long; petals with oil glands ..... *L. brachyandrum*
7. Ovary 5-locular; fruits 5-locular, with conspicuous dome; pedicels and peduncles longer  
than 3 mm ..... *L. pallidum*  
Ovary 3-locular; fruits 3-locular, valves at about rim level; pedicels 0.5–1.3 mm long,  
peduncles absent .....8
8. Leaves 7–10 times longer than broad, apex acute; fruits 3–4 mm diameter ..... *L. madidum*  
Leaves 3.5–4.5 times longer than broad, apex obtuse; fruits 4.5–5 mm diameter  
..... *L. luehmannii*



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Fig. 2. *Leptospermum benwellii* a, flowering branchlet  $\times 1$ ; b, branchlet, showing stem flanges with hairs along margin  $\times 18$ ; c, leaf, abaxial surface  $\times 4$ ; d, infructescence  $\times 6$ . All from *Bean 20113* (BRI).

**Field key to *Leptospermum* species from northern and eastern Australia, belonging to the *L. brachyandrum* subgroup**

- 1. Bark rough, grey, persistent throughout ..... 2  
 Bark smooth and deciduous throughout, or with some rough bark at the base.....4
- 2. Leaves quickly glabrescent, yellowish-green; fruits 5-locular, pedicellate..... *L. pallidum*  
 Leaves persistently hairy, grey-green; fruits 3-locular, in sessile clusters.....3
- 3. Leaves 7–11 mm wide, base obtuse; dried fruits 5–6.5 mm diameter ..... *L. speciosum*  
 Leaves 3–5 mm wide, base cuneate; dried fruits 3–4 mm diameter ..... *L. whitei*

- 4. Bark rough at base, especially in larger plants; young leaves and branchlets conspicuously hairy ..... **L. brachyandrum**  
 Bark smooth throughout; young leaves (upper surface) and branchlets appearing glabrous to the naked eye ..... 5
- 5. Branchlets fully pendulous; riparian habitats on Cape York Peninsula, N.T. Top End, and Kimberley ..... **L. madidum**  
 Branchlets not or somewhat pendulous; growing on rocky hillsides or clifflines; eastern Qld and north-eastern NSW ..... 6
- 6. Leaves 10–15 mm long, lower surface densely hairy ..... **L. purpurascens**  
 Leaves 20–50 mm long, lower surface glabrous or with scattered hairs ..... 7
- 7. Newly exposed bark white; leaves linear, 7–10 times longer than wide, apex acute to acuminate; dried fruits 2.9–3.4 mm diameter..... **L. anfractum**  
 Newly exposed bark green; leaves narrowly elliptic, 3.5–7 times longer than wide, apex obtuse or mucronate; dried fruits 4–4.7 mm diameter..... 8
- 8. Leaves 2.7–5 mm wide, 1–3- veined; fruiting valves at rim level ..... **L. benwellii**  
 Leaves 4.1–7.4 mm wide, 5–7 -veined; fruiting valves exerted ..... **L. luehmannii**

**Leptospermum barneyense** A.R.Bean sp. nov.

affinis *L. variabili* autem fructibus longioribus latioribusque et sessilibus, foliis latioribus (2.8–5 mm latis), sepalis plerumque roseis, hypanthio in fructu longiore tholo a valvis exsertis formato differt.

Type: Queensland. Moreton District: North Ridge, Mt Barney National Park, A.R. Bean 7743 & D. Halford, 16 July 1994 (holo BRI; iso MEL, NSW).

Shrub to 2.5 m high, stems somewhat gnarled; bark rough and fibrous throughout, grey in colour. Branchlets glabrous, with conspicuous stem flanges. Leaves alternate, subsessile, concolorous, oblanceolate, 17–23 × 2.8–5.0 mm, flat except near apex where distinctly incurved, apex apiculate or mucronate; younger leaves hairy towards base on lower surface, otherwise glabrous. Inflorescences comprising a single flower on modified shoots in leaf axils; floral bracts shed before anthesis. Flowers 17–25 mm diameter, sessile; hypanthium glabrous, 3.5–4.3 mm long; sepals obtuse, 2.9–3.8 mm long, with abundant oil glands, glabrous, usually pink; petals white or occasionally pink, obovate to orbicular, 5.5–7.8 mm long, oil glands present. Stamens 2.5–3.0 mm long, anthers versatile, cells parallel; stigma capitate; roof of ovary glabrous. Ovary 5-locular. Fruit thick-walled, glabrous, 5.5–8 mm long, 8.0–11.5 mm diameter, sessile; hypanthium hemispherical, exerted valves forming a dome, height of dome always less than hypanthium, sepals tardily deciduous. Seeds brown, narrowly cuneiform, striate, 2.5–3.0 mm long. (Fig. 3).

**Distribution:** Confined to Mt Barney and Mt Maroon in extreme south-eastern Queensland.

**Habitat:** It grows at altitudes between 600 and 1350 metres, in montane heathland or low eucalypt woodland on rhyolite.

**Phenology:** Flowers are recorded between June and October; fruits may be found at any time of the year.

**Affinities:** *Leptospermum barneyense* is closely related to *L. variabile*, but differs by the fruits 5.5–8 × 8–11.5 mm (4.5–5.5 × 6.7–8 mm for *L. variabile*), the sessile flowers and fruits (pedicel 0.4–1.5 mm long for *L. variabile*), the leaves 2.8–5 mm wide (1.8–2.9 mm wide for *L. variabile*), the fruiting hypanthium longer than the dome formed by exerted valves (hypanthium equal to or shorter than dome for *L. variabile*) and the usually pink sepals (white for *L. variabile*).

**Conservation status:** There are some thousands of plants present within the Mt Barney N.P.

**Etymology:** The epithet refers to the Mount Barney National Park, where the species is endemic.



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**Fig. 3.** *Leptospermum barneyense* a, flowering branchlet  $\times 0.8$ ; b, leaf, abaxial surface  $\times 6$ ; c, flower  $\times 3$ ; d, fruit  $\times 4$ . a, b, d from *Bean 6665* (BRI); c from *Bean 7743* (BRI).

**Selected Specimens examined:** Queensland. Moreton District: Mt Maroon, SW of Rathdowney, A.R. Bean 6665, 3 Oct 1993 (BRI, CANB, MEL, NSW); Mt Barney, S.L. Everist 1360, 13 Oct 1935 (BRI); Mt Barney, S.L. Everist 4134, 25 Sep 1949 (BRI); Mt Maroon, S.L. Everist 7031, 28 Jan 1962 (BRI); Mt Barney, summit area East Peak, P.I. Forster PIF15723, 4 Sep 1994 (BRI, CANB, MEL); Mt Barney, S of Ipswich, N. Michael 2630, Sep 1936 (BRI); Mt Maroon, NNE of Mt Barney, V. Moriarty 484, Sep 1970 (BRI, CANB); Mt Barney, east peak summit area, J.M. Powell 1003 & J. Armstrong, 26 Sep 1977 (BRI, NSW).

### Acknowledgments

I am grateful to Rod Spark (NSW Department of Environment and Conservation) for assistance in the field, Andrew Benwell for ecological information and for organising the short but gruelling field trip, Will Smith for the illustrations, and Les Pedley for the Latin diagnoses.

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Manuscript received 5 April 2004  
Manuscript accepted 1 October 2004